

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TENNESSEE
WINCHESTER DIVISION**

CINCINNATI INSURANCE COMPANY,)	
)	
Plaintiff/Counter-Defendant,)	
)	
v.)	Case No. 4:12-CV-32
)	
LARRY BANKS and WANDA SUE BANKS)	
)	
Defendants/Counter-Plaintiffs.)	

AFFIDAVIT OF JOHN J. LENTINI

I, John J. Lentini, under penalty of perjury, hereby swear that the following is true and based on my personal knowledge:

1. I am an expert in using gas chromatography to identify ignitable liquid residues ("ILRs") in fire debris.
2. I have personally conducted more than 2,000 fire scene inspections and have been accepted as an expert witness on more than 200 occasions.
3. I have worked in the field of fire investigations since 1974. I began my career with the State of Georgia Crime Laboratory, where I worked from 1974-77, and have worked as a private fire investigator since that time.
4. I graduated with a B.A. in Natural Sciences from the New College in Sarasota, Florida. I took post-graduate courses in chemistry and criminal

investigation at the University of Akron in 1973-74 and completed twenty credit hours of graduate-level chemistry at Georgia State University in 1979-80.

5. I am certified by the International Association of Arson Investigators (IAAI) and the National Association of Fire Investigators (NAFI). I am also a certified Diplomate of the American Board of Criminalistics (ABC), with a specialty in Fire Debris Analysis. Obtaining this certification requires successfully completing a written general knowledge examination covering all phases of evidence handling and analysis, and a specialty examination on the details of fire debris analysis. I was elected Chair of the American Society for Testing and Materials Committee E30 on Forensic Sciences in 1999 and re-elected in 2001 and 2003. I have also served as a Member of the American Academy of Forensic Sciences President's Panel on Scientific Integrity. A copy of my resume is attached hereto as Exhibit 1.
6. Among my peer-reviewed publications relating to the chemical analysis of fire debris are:
- NFPA 921, Guide for Fire and Explosion Investigations, NFPA, Quincy, MA, Contributor to the 1995, 1998, 2001, 2004, 2008 and 2011 editions.
 - "Persistence of Floor Coating Solvents," *J. Forensic Sciences*, Vol. 46, No. 6, November 2001.
 - "The Petroleum-Laced Background," (co-authored with Julia Dolan and Cheryl Cherry), *J. Forensic Sciences*, Vol. 45, No. 5, September 2000.
 - "Differentiation of Asphalt and Smoke Condensates from Liquid Petroleum Distillates Using GC/MS," *J. Forensic Sciences*, Vol. 43, No. 1, January 1998.

- “Comparison of the Eluting Efficiency of Carbon Disulfide with Diethyl Ether: The Case for Laboratory Safety,” (co-authored with Dr. Andrew T. Armstrong), *J. Forensic Sciences*, Vol. 42, No. 2, March 1997.
- “An Improved Method of Obtaining Ion Profiles From Ignitable Liquid Residue Samples,” FBI International Symposium on the Forensic Aspects of Arson Investigations, Fairfax, VA, August 1, 1995.
- “*Standard Test Method for Flammable or Combustible Liquid Residues in Extracts from Samples of Fire Debris by Gas Chromatography*,” ASTM E1387-90. Principal Author as Task Group Coordinator.
- “Guidelines for Laboratories Performing Chemical and Instrumental Analysis of Fire Debris Samples,” Principal author as Co-Chair of IAAI Forensic Science Committee, June 1988.

7. I have been retained by J Brandon McWherter, counsel for Mr. and Mrs. Banks, to review certain issues in this case, and to comment on whether analyses conducted on behalf of Cincinnati meet the standards of care in the industry for conducting such analyses. Although I may discuss other issues in the future, the subject of this affidavit is limited to the chemical analysis of fire debris performed by Christine S. Foran, chemist with the EFI Global chemistry laboratory.

8. Specifically, Ms. Foran issued a report dated December 20, 2011 in which she reported that two samples from bedroom number one, sample 1 identified as fire debris, and sample 3 identified as flooring, were positive for ignitable liquid residue. She identified this residue as “trace medium to heavy petroleum distillate.”

9. I was provided with the chemical analysis data in the form of total ion chromatograms (TIC) and extracted ion profiles (EIP) from these two samples, as

well as a sample of known kerosene that Ms. Foran used to compare against the data obtained from the two samples.

10. Based on my review of the data, I can state unequivocally that Ms. Foran has misidentified the residue that she extracted from sample 1. The residue is not a heavy petroleum distillate or a medium to heavy petroleum distillate. Rather, it is asphalt smoke condensate.

11. Ms. Foran knew or should have known that the residue was asphalt smoke condensate as it is clearly reflected in her data. Further, Ms. Foran has made at least one similar error in the past. In 2007, I was asked to review a similar analysis conducted by Ms. Foran, wherein she incorrectly identified kerosene as having been present in a sample of fire debris. This analysis resulted in an insurance carrier wrongfully denying a fire loss claim. I was able to demonstrate to the satisfaction of EFI Global's client, National Grange Insurance Company, that Ms. Foran had made an erroneous determination. As a scientist, I find it shocking that she has made the same egregious error again.

12. In 1997, I conducted a research project to attempt to distinguish between asphalt residue and petroleum distillates. I was successful in developing a method to do just that, and my research resulted in publication of a peer-reviewed article in the *Journal of Forensic Sciences* entitled "Differentiation of Asphalt and Smoke

Condensates from Liquid Petroleum Distillates using GC/MS.”

13. Subsequent to the publication of that paper, the concepts embodied therein were adopted by the fire debris analysis community in the form of an addition to the generally accepted test method for fire debris analysis known as ASTM E1618, *Standard Test Method for Ignitable Liquid Residues in Extracts from Fire Debris Samples by Gas Chromatography-Mass Spectrometry*. The addition to the standard was made in the 2001 edition. The relevant paragraph from ASTM E1618 (a test method which Ms. Foran purports to follow) is reproduced below.

11.2.2 Extracts that meet the criteria for heavy petroleum distillates should be reviewed carefully for “extraneous components” that elute near n-alkanes and are the result of polyolefin or high molecular weight hydrocarbon (asphalt) decomposition. Peaks representing the corresponding 1-alkene or 1, (n-1) diene, and having an abundance near the concentration (within one-half an order of magnitude) of the alkane, should be considered as indicating the presence of polyolefin or asphalt decomposition products rather than fuel oil products. ...

14. The review for the presence of alkenes is quite straightforward. One compares the alkane profile by examining those ions having a mass to charge ratio of 57 with the alkene profile by examining those ions having a mass to charge ratio of 55. When one is examining an ordinary petroleum distillate, those two patterns are essentially identical, with the exception being that the abundance of the 55 ions is lower. Exhibit 2 shows a comparison of ion 57 and ion 55 from known weathered kerosene.

15. In contrast, Exhibit 3 shows the same comparison conducted on a sample of known asphalt smoke condensate. The ion 55 profile is distinctly different from the ion 57 profile.
16. Exhibit 4 shows Ms. Foran's data from sample number 1. The ion 55 profile is decidedly different from the ion 57 profile in that the alkene peaks which appear just before the alkane peaks are considerably taller than the alkane peaks in the ion 55 profile. (Ms. Foran uses a combination of four ions to profile the alkanes, 43, 57, 71 and 85 and two ions to profile the alkenes, 55 and 69, but the resulting profiles are substantially the same as the profiles shown in exhibits 2 and 3.)
17. Besides missing the major diagnostic feature that allows the identification of the extract from sample 1 as asphalt smoke condensate, Ms. Foran also another important feature of the data. There are no cycloalkanes demonstrated by the data, even though ASTM E1618 requires their presence for a distillate identification. ASTM E1618 contains the following language with respect to the need for cycloalkanes in the identification of distillates.

10.2 In order for an extract to be characterized as containing a particular class, the following minimum criteria shall be met:

10.2.2 Criteria for the Identification of Distillates:

10.2.2.3 *Cycloalkanes*—Present, less abundant than alkanes. Pattern varies by boiling range and peak spread.

Although ions 55 and 69 will show cycloalkanes, most laboratories examine the extract for the presence of *n*-alkylcyclohexanes, which are best analyzed by examining ion 83. There is no evidence that Ms. Foran's technique includes examining ion 83.

18. With respect to sample number 3, Ms. Foran seems to have correctly identified the residue as containing a medium to heavy petroleum distillate, though at very low quantities. The data, however, do not demonstrate the presence of cycloalkanes.

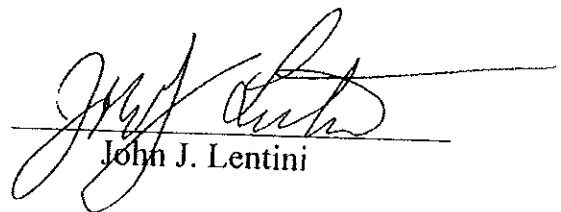
19. This finding of medium to heavy petroleum distillate is not meaningful, given that the sample substrate is hardwood flooring. It is known, and has been known for some time, that wood flooring, when finished with an oil-based coating, will retain substances such as medium to heavy petroleum distillates indefinitely. I have conducted scientific research this subject and published my results in a peer-reviewed journal in 2001. The title of the paper is "Persistence of Floor Coating Solvents." In order to be able to determine that the distillate is not a part of the background, the submission of a comparison sample is an absolute requirement. In the absence of negative comparison sample, a finding of medium or heavy petroleum distillate in a sample of hardwood flooring is meaningless. Ms. Foran should have either requested a comparison sample or, at a minimum, included in

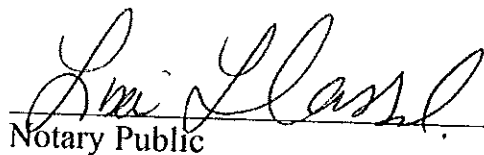
her report a disclaimer to the effect that the finding of distillate in a sample of hardwood flooring might not reflect the presence of a foreign ignitable liquid.

20. In conclusion, it is my opinion to a reasonable degree of scientific certainty that Ms. Foran conducted a substandard analysis, not in conformance with generally accepted methods, resulting in an incorrect determination of the identity of the extract in sample number 1, and resulting in a meaningless determination of the identity of the extract in sample number 3. Further, given her history of making errors such as this, it is shocking that a major investigations company such as EFI Global, would continue to rely on Ms. Foran's flawed analyses for making critical determinations about the causes of fires.

Further affiant sayeth naught

Subscribed and sworn to before me
this 19th day of April, 2013.


John J. Lentini


Notary Public

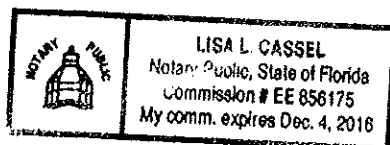


EXHIBIT 1
AUTHOR'S RESUME



**Resume of
John J. Lentini, CFI, D-ABC**

**Scientific Fire Analysis, LLC
88005 Overseas Highway, #10-134
Islamorada, FL 33036
(770) 815-6392 scientific.fire@yahoo.com**

Capabilities

He can investigate fire or explosion scenes, locate the point of origin, and chemically determine the presence of flammable liquids or explosives. He can evaluate the validity of the work of other investigators through review of reports, testimony, photographs and other data. He is familiar with fire and building codes and can determine whether a structure, product, service or installation met applicable code requirements prior to a fire or other loss. He is capable of performing all types of chemical and instrumental analyses, and giving expert testimony as to the results of his investigations and analyses.

Scientific Fire Analysis Responsibilities

President and Principal Investigator. Conducts preliminary evaluations of customer problems. Conducts, supervises or reviews investigations in the area of fire, arson, explosion, and asphyxiation, including review of chemical analysis issues. Prepares and presents expert testimony. Provides litigation support. Provides training to fire investigators, fire litigators and the public.

Education

B.A. in the Natural Sciences (Chemistry, Biology, Physics), New College, Sarasota, FL, June 1973.
Postgraduate courses in Chemistry and Criminal Investigation, University of Akron, OH, 1973-74.
Twenty credit hours Graduate Level Chemistry, Georgia State University, Atlanta, GA, 1979-80.

Training

Short Course in Instrumental Analysis, F.B.I. Academy, Quantico, VA, 1976.
Seminar on Arson and Fraud Investigation, University of Alabama at Birmingham, 1979.
Seminar on Gas Fires and Explosions, University of Alabama at Birmingham, 1980.
33rd, 35th, 37th, 39th, 40th, 42nd and 59th International Association of Arson Investigators Seminars, 1982-91.
Southeast Arson Seminar, University of Georgia, 1979-84, 1996, 2002.
1st, 2nd and 3rd Int'l Symposia on Recent Advances in Arson Analysis and Detection, 1982, 88, 90.
American Academy of Forensic Sciences (AAFS), Annual Meetings, 1988-2011.
National Fire Protection Association (NFPA) Life Safety Code Seminar, Nashville, TN, 1991.
IAAI Electrical Fire Investigation Seminar, Atlanta, GA 1991.
AAFS Workshop on Contemporary Issues of Fire Investigation and Analysis (Panelist) Seattle, WA, 1995.
FBI International Symposium on the Forensic Aspects of Arson Investigations, Fairfax, VA, 1995.
Georgia Fire Investigators Association (GFIA) Seminar on Appliance Fires, Decatur, GA, 1997.
Workshop on Fire Investigations, Forensic Science Society, Harrogate, England, 1997.
Anglo-American Fire Investigation Conference, Brunel University, Uxbridge, England, 1997.
Forensic Fire Engineering and Failure Analysis, Society of Fire Protection Engineers (SFPE), 1998.
International Fire Investigation Conference, Brunel University, Uxbridge, England, 1999.
Fire Litigation Seminar, National Association of Fire Investigators (NAFI)/NFPA, Sarasota, FL, 2000.
Lightning 101, Global Atmospheric, Inc., Atlanta, GA, 2000.
Technical Working Group on Fire and Explosion Investigations, 2nd, 3rd and 4th Annual Symposia, Orlando, FL, 2002-2004.
Fire Dynamics Seminar, NFPA Technical Committee on Fire Investigations, Baltimore, MD, 2003.

Training (continued)

First International Symposium on Fire Investigation, Fire Service College, Moreton, England, 2004.
10th International Fire Science & Engineering Conference (Interflam), Edinburgh, Scotland, 2004.
Introduction to Fire Dynamics Simulator and Smokeview, SFPE, Chicago, IL, 2004.
International Fire Investigation Conference, Brunel University, Uxbridge, England, 2005.
The Scientific Method for Fire and Explosion Investigations, CFI Trainer.net, 2006.
Second International Symposium on Fire Investigation, University of Cincinnati, Cincinnati OH, 2006.
Third International Symposium on Fire Investigation, University of Cincinnati, Cincinnati OH, 2008.
Introduction to Fire Dynamics and Modeling, CFI Trainer.net, 2008.
A Ventilation-Focused Approach to the Impact of Building Structures and Systems on Fire Development, CFI Trainer.net, 2009.
Post Flashover Fires, CFI Trainer.net, 2009.
Motive, Means and Opportunity: Determining Responsibility in an Arson Case, CFI Trainer.net, 2010.
Fourth International Symposium on Fire Investigation, University of Maryland, Columbia, MD, 2010.
International Association of Arson Investigators Annual Training Conference, Las Vegas, NV, 2011.
Evidence Examination: What Happens at the Lab?, CFI Trainer.net, 2011.
Understanding Fire Through the Candle Experiments, CFI Trainer.net, 2011.
Fifth International Symposium on Fire Investigation, University of Maryland, Columbia, MD, 2012.

Professional Certifications and Licensure

He holds certifications from both the International Association of Arson Investigators (IAAI) and the National Association of Fire Investigators (NAFI). He is also a certified Diplomate of the American Board of Criminalistics, with a specialty in Fire Debris Analysis.

He holds Florida private investigator's license number C 2600083. Florida has reciprocal license agreements with the following states: CA, GA, LA, NC, OK, TN, VA.

Experience**Applied Technical Services, Inc. 1978-2006**

Manager, Fire Investigations. Authored over 3,000 technical reports. Supervised two fire investigators and an electrical engineer. Served as project manager for major fire investigations. Conducted site inspections, chemical analyses, designed and conducted physical experiments to re-create fire scenarios. Provided training, consulting and expert witness testimony.

Metallurgical Engineers of Atlanta May-December, 1977

Fire scene inspection. Chemical analysis of fire debris. Quantitative chemical and physical analysis on all types of metal. Radiographic inspection of fittings and welds.

State of Georgia Crime Laboratory August 1974 - May 1977

Qualitative and quantitative analysis of all types of physical evidence associated with violent and/or property crimes, and testifying to the results of such analyses. Responding statewide to conduct field investigations for law enforcement agencies. Instruction of law enforcement officers in the collection and preservation of physical evidence.

Courtroom Experience

Since 1975, he has given expert testimony in over two hundred cases in civil and criminal court in several states and in the Federal Courts. He has testified for both Plaintiffs and Defendants, and has twice served as a neutral expert hired to advise the court. A schedule of testimony provided since 2000, both in trial and in depositions, is available upon request.

Professional Associations

Member, American Academy of Forensic Sciences President's Panel on Scientific Integrity, 2009.
Vice Chair, ASTM Committee E30 on Forensic Sciences, elected 1995, re-elected 1997 and 2005.
Chair, ASTM Committee E30 on Forensic Sciences, elected 1999, re-elected 2001 and 2003.
Chair, ASTM Subcommittee E 30.01 on Criminalistics, 1991-1995.
Director, American Board of Criminalistics (ABC), elected 1993, re-elected 1996.
Chair, ABC Proficiency Administration Committee, 1993-1999.
Fellow of the American Academy of Forensic Sciences (AAFS) 1995-present. (Member since 1988)
Chair, AAFS Criminalistics Section Nominating Committee, 1999-2007.
Member, Editorial Board, *Journal of Forensic Sciences*, 2003-present.
Peer Reviewer, *Forensic Science International*, 2006-present.
Member, National Fire Protection Association (NFPA) Technical Committee 921 on Fire Investigations, 1996-present. (Representing ASTM Committee E30 on Forensic Sciences)
Member, NFPA Technical Committee 1033 on Fire Investigator Professional Qualifications, 2012-present.
Member, Scientific Working Group on Fire and Explosion Investigations (SWGEX), 1997-present.
Planning Panel Member, U. S. Dept. of Justice, NIJ Technical Working Group on Fire Investigations, 1997-2000.
Peer Reviewer, U. S. Dept. of Justice, NIJ-Office of Science & Technology, 2002, 2007-present.
Member of the National Association of Fire Investigators (NAFI), 1996-present.
Member of the International Association of Arson Investigators (IAAI), 1978-2001, 2008-present.
Member of the Florida Chapter of the IAAI, 2008-present.
Chair, IAAI Forensic Science Committee, 1988-1991.
Member of the Metro Atlanta Fire Investigators Association, 1978-2007. President, 1981.
Member of the American Chemical Society, 1978-present.

Publications**Books**

Scientific Protocols for Fire Investigation, First Edition, 2006,
Second Edition, 2012, CRC Press, Boca Raton, FL

Book Chapters

Encyclopedia of Forensic Sciences, 2nd Edition contributor of three entries ("Evidence Collection at Fire Scenes," "Fire Scene Inspection Methodology," "Fire Patterns and Their Interpretation") edited by Jay Siegel, Pekka Saukko and Max Houck, Academic Press (Elsevier), London, 2013.
"Fire Scene Investigation and Laboratory Analysis of Fire Debris," Chapter 3.5 in *Forensic Science, Current Issues, Future Directions*, edited by Douglas Ubelaker, John Wiley & Sons, Hoboken, NJ, 2013.
"Analysis of Fire Debris," Chapter 3 in *Fire Chemistry Handbook*, edited by Lawrence Kobilinsky John Wiley & Sons, Hoboken, NJ, 2012.
"Fires, Arsons and Explosions," Chapter 39 in *Modern Scientific Evidence: The Law and Science of Expert Testimony*, edited by Faigman, Kaye, Saks and Sanders, (2011 Editor: Erin Murphy) West Publishing Co., St. Paul, MN, 1997, (Previous revisions: 2001, 2007.)
"Basic Fire Science," Chapter 3 and "Fire Patterns," Chapter 4 in *Fire Investigator Principles and Practice to NFPA 921 and 1033. 3rd Edition*. IAFC, IAAI, NFPA and Jones and Bartlett, publishers, 2011. (both chapters co-authored with Jeff Spaulding.)
Wiley Encyclopedia of Forensic Science, contributor of five entries ("Arson Investigation: Misconceptions and Mythology," "Fire: Chemistry of," "Fire: Dynamics and Pattern Production," "Fire: Scene Investigation," "Fire Debris: Laboratory Analysis of") and section editor for Fire and Explosives entries, edited by Allan Jamieson and Andre Moenssens, Wiley & Sons, West Sussex, UK, 2009.
"Forensic Arson Investigation," McGraw-Hill *Yearbook of Science and Technology*, 2003.

Standards

- NFPA 921, Guide for Fire and Explosion Investigations*, NFPA, Quincy, MA, Contributor to the 1995, 1998, 2001, 2004, 2008 and 2011 editions as principal committee member.
- Fire and Arson Scene Evidence: A Guide for Public Safety Personnel*, National Institute of Justice Office of Justice Programs, USDOJ Publication Number NCJ 181584, Contributor to the document as a member of the Editorial Board.
- "Standard Test Method for Flammable or Combustible Liquid Residues in Extracts from Samples of Fire Debris by Gas Chromatography," ASTM E 1387-90. Principal Author as Task Group Coordinator.
- "Guidelines for Laboratories Performing Chemical and Instrumental Analysis of Fire Debris Samples," Principal author as Co-Chair of IAAI Forensic Science Committee, June 1988.

Peer Reviewed Publications

- "Forensic Science Standards: Where They Come From and How They Are Used," *Forensic Science Policy and Management: An International Journal*, Vol. 1, No. 1, February 2009.
- "Persistence of Floor Coating Solvents," *J. Forensic Sciences*, Vol. 46, No. 6, November 2001.
- "The Petroleum-Laced Background," (co-authored with Julia Dolan and Cheryl Cherry), *J. Forensic Sciences*, Vol. 45, No. 5, September 2000.
- "A Calculated Arson," *The Fire and Arson Investigator*, Vol. 49, No. 3, April 1999.
- "Differentiation of Asphalt and Smoke Condensates from Liquid Petroleum Distillates Using GC/MS," *J. Forensic Sciences*, Vol. 43, No. 1, January 1998.
- "Comparison of the Eluting Efficiency of Carbon Disulfide with Diethyl Ether: The Case for Laboratory Safety," (co-authored with Dr. Andrew T. Armstrong), *J. Forensic Sciences*, Vol. 42, No. 2, March 1997.
- "An Improved Method of Obtaining Ion Profiles From Ignitable Liquid Residue Samples," *FBI International Symposium on the Forensic Aspects of Arson Investigations*, Fairfax, VA, August 1, 1995.
- "ASTM Standards for Forensic Sciences," *J. Forensic Sciences*, Vol. 40, No. 1, January 1995.
- "Behavior of Glass at Elevated Temperature," *J. Forensic Sciences*, Vol. 37, No. 5, September 1992.
- "Baseline Characteristics of Residential Structures Which Have Burned to Completion: The Oakland Experience," (co-authored with David M. Smith, C.F.I. and Dr. Richard W. Henderson, C.F.I.), *Fire Technology*, Vol. 28, No. 3, August 1992.

Editorial-Reviewed Publications

- "Totality Of The Evidence" Or Contextual Bias: Where Do You Draw The Line? *Proceedings of the 5th Int'l Symposium on Fire Investigations Science and Technology* (ISFI), NAFI, Sarasota, FL, 2012.
- "The Evolution of Fire Investigation and Its Impact on Arson Cases," *Criminal Justice*, American Bar Association, Vol. 27, No. 1, Spring 2012.
- "Ignitable Liquid Residue Source Elimination by Molecular Weight Estimation," *Proceedings of the American Academy of Forensic Sciences*, AAFS, Colorado Springs, CO, 2102.
- "Arson probes: Instinct giving way to modern science," *Journal of Insurance Fraud in America*, Vol. 2, No. 1, Coalition Against Insurance Fraud, Washington, DC, 2011.
- "Progress' in Fire Investigation: Moving from Witchcraft and Folklore to the Misuse of Models and the Abuse of Science," *Proceedings of the 4th International Symposium on Fire Investigations Science and Technology* (ISFI), NAFI, Sarasota, FL, 2010.
- "Toward a More Scientific Determination: Minimizing Expectation Bias in Fire Investigations," *Proceedings of the 3rd International Symposium on Fire Investigations Science and Technology* (ISFI), NAFI, Sarasota, FL, 2008.
- "The Standard of Care in Fire Investigation," *Canadian Association of Fire Investigators Journal*, Spring 2007.

Editorial-Reviewed Publications (continued)

- "Report on the Peer Review of the Expert Testimony in the Cases of *State of Texas v. Cameron Todd Willingham* and *State of Texas v. Ernest Ray Willis*," (Co-authored with Douglas J. Carpenter, Daniel L. Churchward, David M. Smith and Michael A. McKenzie), Available at www.innocenceproject.org.
- "The Mythology of Arson Investigation," *Proceedings of the 2nd International Symposium on Fire Investigations Science and Technology (ISFI)*, NAFI, Sarasota, FL, 2006.
- "What You Don't Know Can Hurt You: How Do You Know Your Lab Has It Right?" *The Fire and Arson Investigator*, Vol. 53, No. 3, April, 2003.
- "Unconventional Wisdom: The Lessons of Oakland," *The Fire and Arson Investigator*, Vol. 43, No. 4, June 1993.
- "The Lime Street Fire: Another Perspective," *The Fire and Arson Investigator*, Vol. 43, No. 1, Sept. 1992.
- "Melted Steel: How Important?" (co-authored with J. Finis McCarver, P.E.), *The National Fire and Arson Report*, Vol. 10, No. 4, August 1992.
- "The Behavior of Flammable and Combustible Liquids," (co-authored with Laurel V. Waters), *The Fire and Arson Investigator*, Vol. 42, No. 1, September 1991.
- "Appliance Fires: Determining Responsibility," (co-authored with R.I. Underwood, P.E.), *The National Fire and Arson Report*, Vol. 7, No. 2, April 1989.

Selected Presentations (1996-Present)

- "Scientific Protocols for Fire Investigation," Oregon Chapter IAAI, January 29-February 1, 2013, Grants Pass, OR.
- "Totality Of The Evidence" Or Contextual Bias: Where Do You Draw The Line? 5th International Symposium on Fire Investigations Science and Technology (ISFI), October 15, 2012, Columbia, MD
- "Successful Challenges to BS (Bad Science) in Bogus Arson Cases," New York State Bar Association, Forensics and the Law, October 12, 2012, New York, NY
- "Challenges to Accurate Fire Cause Determinations," Forensics: Science Policies to Increase Confidence, briefing for congressional staffers sponsored by ACS, September 26, 2012, Washington, DC
- "Fire and Innocence: Using Good Science to Overcome Witchcraft," American Chemical Society, Division of Chemistry and the Law, August 20, 2012, Philadelphia, PA
- "Arson Investigation and Litigation," 2012 Innocence Network Conference, UMKC School of Law, March 31, 2012 Kansas City, MO.
- "Progress in the Investigation of Fire Scene Evidence," New Mexico State Bar CLE, March 30, 2012 Albuquerque, NM.
- "Ignitable Liquid Residue Source Elimination by Molecular Weight Estimation," American Academy of Forensic Sciences (AAFS) Criminalistics Section, February 24, 2012, Atlanta, GA.
- "Scientific Protocols for Fire Investigation," Arizona Chapter IAAI, July 13-15, 2011, Prescott, AZ.
- "Fire and Science," "The Mythology of Arson Investigation," "Sources of Error in Fire Investigation," Pennsylvania Association of Arson Investigators, June 6 and 7, 2011, State College, PA.
- "The Questionable Validity of Fire Origin Determination," ABA Criminal Justice Section, 2nd Annual Prescription for Criminal Justice Forensics, Fordham University School of Law June 3, 2011, New York, NY.
- "'Progress' In Fire Investigation: Moving from Witchcraft and Folklore to the Misuse of Models and the Abuse of Science," 4th International Symposium on Fire Investigations Science and Technology, (ISFI) September 28, 2010, Columbia, MD.
- "Rising From the Ashes – What We Have Learned From the Cameron Todd Willingham Case," National Institute of Justice (NIJ) Annual Conference, June 16, 2010, Arlington, VA.

Selected Presentations (continued)

- "Fire Investigation Reviews: How It Looks From The 'Other' Side" 61st Annual Training Course, International Association of Arson Investigators, May 18, 2010, Orlando, FL.
- "Evaluating Arson Evidence: Avoiding Wrongful Convictions," Joint Judicial and Senior Manager's Spring Conference, The Role of the Court in an Age of Developing Science and Technology, May 7, 2010, Washington, D.C.
- "Post conviction Strategies in Arson Cases," NACDL's Litigating Non-DNA Post-Conviction Innocence Cases Training Program, April 15, 2010, Atlanta, GA.
- "Avoiding Wrongful Convictions: Proving the Corpus Delicti," AAFS Jurisprudence Section, February 26, 2010, Seattle, WA.
- "Meeting the Challenge of the NRC Report: Producing Meaningful Mandatory Standards for Forensic Science," AAFS, Criminalistics Section, February 24, 2010, Seattle, WA.
- "Minimizing Expectation Bias in Fire Investigations," Workshop # 18, AAFS, February 23, 2010, Seattle, WA.
- "Fire Investigation in the 21st Century," AOUSC Sixth National Seminar on Forensic Evidence and the Law, January 7, 2010, San Diego, CA.
- "It's All About the Science: Defense of a Large Fire Loss," Property Loss Research Bureau 2009 Large Loss Conference, November 3, 2009, Tampa FL.
- "Myths and Misconceptions of Fire Investigation," "Fire Investigation in the 21st Century," 64th Annual Florida Arson Symposium, October 19, 2009, Orlando, FL.
- "Forensics Under Fire-Case in Point," TCCA Actual Innocence Conference, Center for American and International Law, August 18, 2009, Plano, TX.
- "Fire Investigation in the 21st Century," Ontario Fire College, May 14, 2009, Gravenhurst, Ontario.
- "Forensic Science in the 21st Century: The National Academy of Sciences Report and Beyond," Sandra Day O'Connor College of Law at the University of Arizona, April 4, 2009, Tempe, AZ.
- "The State of the Art in Fire Investigation," Inaugural Lecture Series, Centre for Forensic Science and Medicine, University of Toronto Medical School, February 27, 2009, Toronto, Ontario.
- "Watching Paint Dry, Testing Spontaneous Ignition Hypotheses," AAFS Criminalistics Section February 20, 2009, Denver, CO.
- "Forensic Science Standards: Where They Come From and How They Are Used," Workshop # 18, AAFS, February 17, 2009, Denver, CO.
- "Origin: A Fire Investigator's Most Important Hypothesis," Canadian National Advanced Fire, Arson and Explosion Investigation Training Program, October 28, 2008, Toronto, Ontario.
- "Evaluating Arson Cases: Avoiding Wrongful Prosecutions and Convictions," 63rd Annual Short Course for Prosecuting Attorneys, Northwestern University School of Law, July 22, 2008, Chicago, IL.
- "Toward a More Scientific Determination: Minimizing Expectation Bias in Fire Investigations," 3rd ISFI, May 20, 2008, Cincinnati, OH.
- "The Mythology of Arson Investigation," 59th Annual Training Course, International Association of Arson Investigators, April 30, 2008, Denver, CO.
- "Sources of Error in Fire Investigation," AAFS Criminalistics Section, February 21, 2008, Washington, DC.
- "Evaluating Arson Cases: Avoiding Wrongful Prosecutions and Convictions," 62nd Annual Short Course for Prosecuting Attorneys, Northwestern University School of Law, July 24, 2007, Chicago, IL.
- "The State of the Art in Fire Investigation," National Academy of Sciences, Committee on Identifying the Needs of the Forensic Sciences Community, April 23, 2007, Washington, D.C.
- "Critical Evaluation of Arson Charges," California Attorneys for Criminal Justice, California Public Defenders Association Capital Case Defense Seminar, February 17, 2007, Monterey, CA.

Selected Presentations (continued)

- "The Mythology of Arson Investigation," 2nd ISFI, June 27, 2006, Cincinnati, OH.
- "Critical Evaluation of Arson Charges," Third National Seminar on Forensic Evidence and the Criminal Law, Administrative Office of the U. S. Courts, January 28, 2006, San Antonio, TX.
- "Sources of Error in Fire Investigation," Canadian National Advanced Fire, Arson And Explosion Investigation Training Program, October 25, 2005, Toronto, Ontario.
- "NFPA 921, Design and Development," Live, Learn & Pass It On, Training Conference, Gardiner Associates, Brunel University, June 29, 2005, Uxbridge, England.
- "Distinguishing Fact from Fantasy in Arson Investigations," Capital Cases: Third Seminar Series, Illinois Supreme Court Committee on Capital Cases, May 13, 2005, Chicago, IL.
- "Laboratory Analysis of Fire Debris: Why It's Important, How It Works, and How to Evaluate a Lab," Insurance Committee for Arson Control, 15th National Training Seminar, February 3, 2004, Sandestin, FL.
- "Misadventures in Fire Investigations: Common Features, Common Errors, and How to Spot a Dog," AAFS, Interdisciplinary Session, February 20, 2004, Dallas, TX.
- "Bogus Opinion Evidence: Exposing It Without DNA," AAFS, Plenary Session, February 18, 2004, Dallas, TX.
- "Measurement, Certification, Accreditation," 30th Annual FBI Symposium on Crime Laboratory Development, Sponsored by the FBI Laboratory. September 25, 2002, St. Louis, MO.
- "Standards Development for Fire Investigations," Southeastern Arson Seminar, Sponsored by the Georgia State Fire Marshal and the Georgia Fire Investigators Association. August 8, 2001, Brunswick, GA.
- "Understanding the Opposing Expert," Southeastern Arson Seminar, Sponsored by the Georgia State Fire Marshal and the Georgia Fire Investigators Association. August 8, 2001, Brunswick, GA.
- "Consensus Standards: A Priority for Forensic Science," Crime Laboratory Improvement Program (CLIP) Summit, Sponsored by the U. S. Justice Department. July 14, 2000, Washington, DC.
- "The Role of Experts in Fire Litigation," Anglo-American Fire Investigation Conference, Gardiner Associates, Brunel University, June 30, 1999, Uxbridge, England.
- "Accreditation, Certification and Standardization in the Forensic Sciences," AAFS Interdisciplinary Session, February 18, 1999, Orlando, FL.
- "A Calculated Arson," Anglo-American Fire Investigation Conference, Gardiner Associates, Brunel University, June 15, 1997, Uxbridge, England.
- "Misleading Evidence or Misreading Evidence?" Joint Meeting of the Forensic Science Society and the California Association of Criminalists, June 11, 1997, Harrogate, England.
- "Forensic Science Standards: How to Write Them," AAFS, February 22, 1997, New York, NY.
- "Differentiation of Asphalt and Smoke Condensates from Liquid Petroleum Products Using GC-MS," AAFS Criminalistics Section, February 22, 1996, Nashville, TN.

Selected Media Appearances

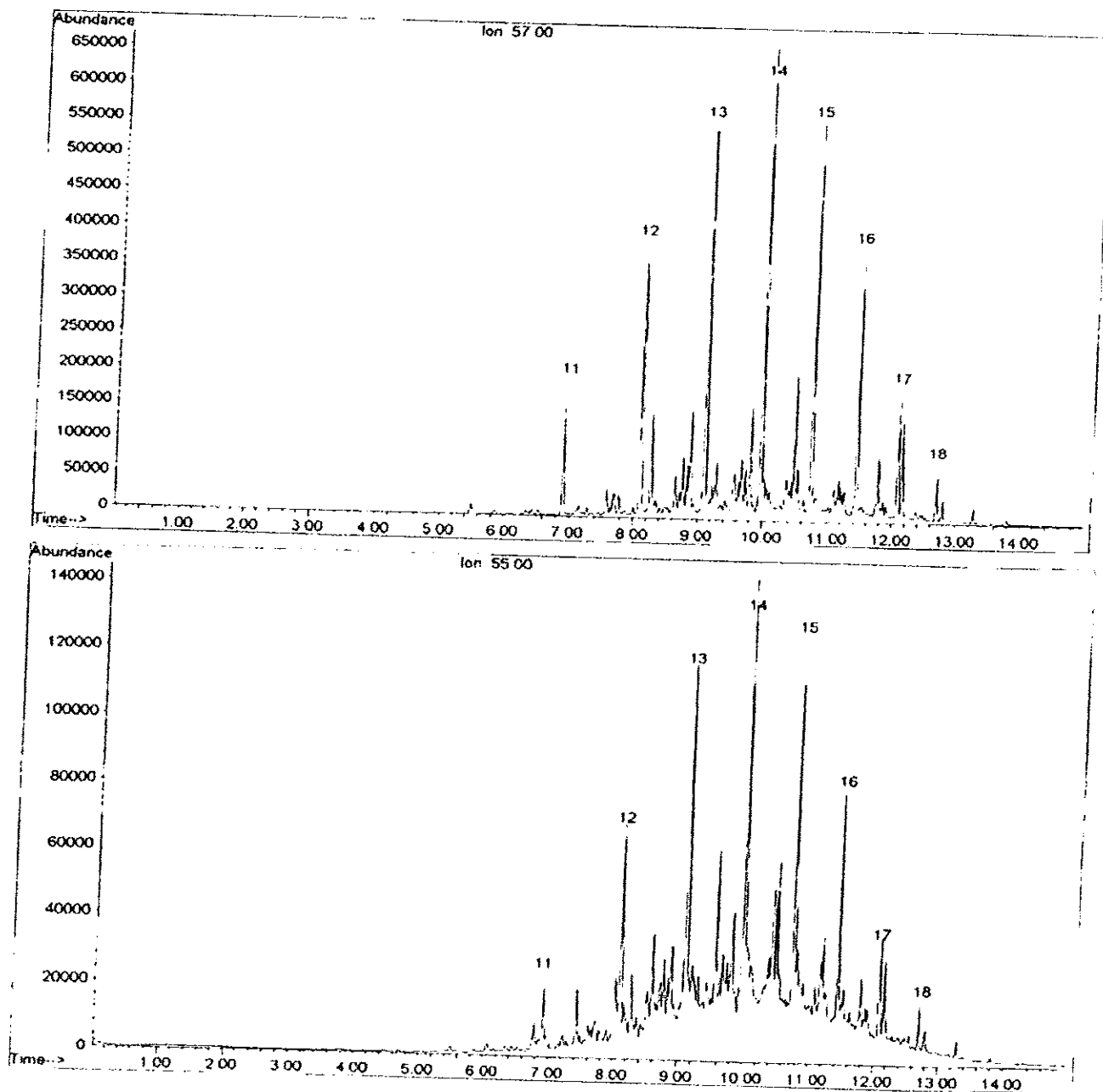
- "Incendiary, The Willingham Case," a 2011 documentary produced by Steve Mims and Joe Bailey, Jr. Available from iTunes.
- "Death by Fire," a *Frontline* documentary about the Willingham case. First aired October 19, 2010. Produced by Jessie Deeter. Available at pbs.org/wgbh/pages/frontline
- "Burned," an *ABC News 20/20* episode about wrongful arson prosecutions. Produced by Tom Berman. Season 30, Episode 18. First aired May 7, 2010. Available at abc.go.com
- "When Forensics Fail," a *National Geographic* documentary about the Willis case. First aired October 18, 2007. Available at video.msnbc.msn.com

Awards

- American Academy of Forensic Sciences, Criminalistics Section Special Meritorious Service Award, 2008.
- Boy Scouts of America Silver Beaver Award, Atlanta Area Council, 2004.
- ASTM Award of Merit, 2001.
- ASTM E30 Forensic Sciences Award, 1996.

Exhibit 2.

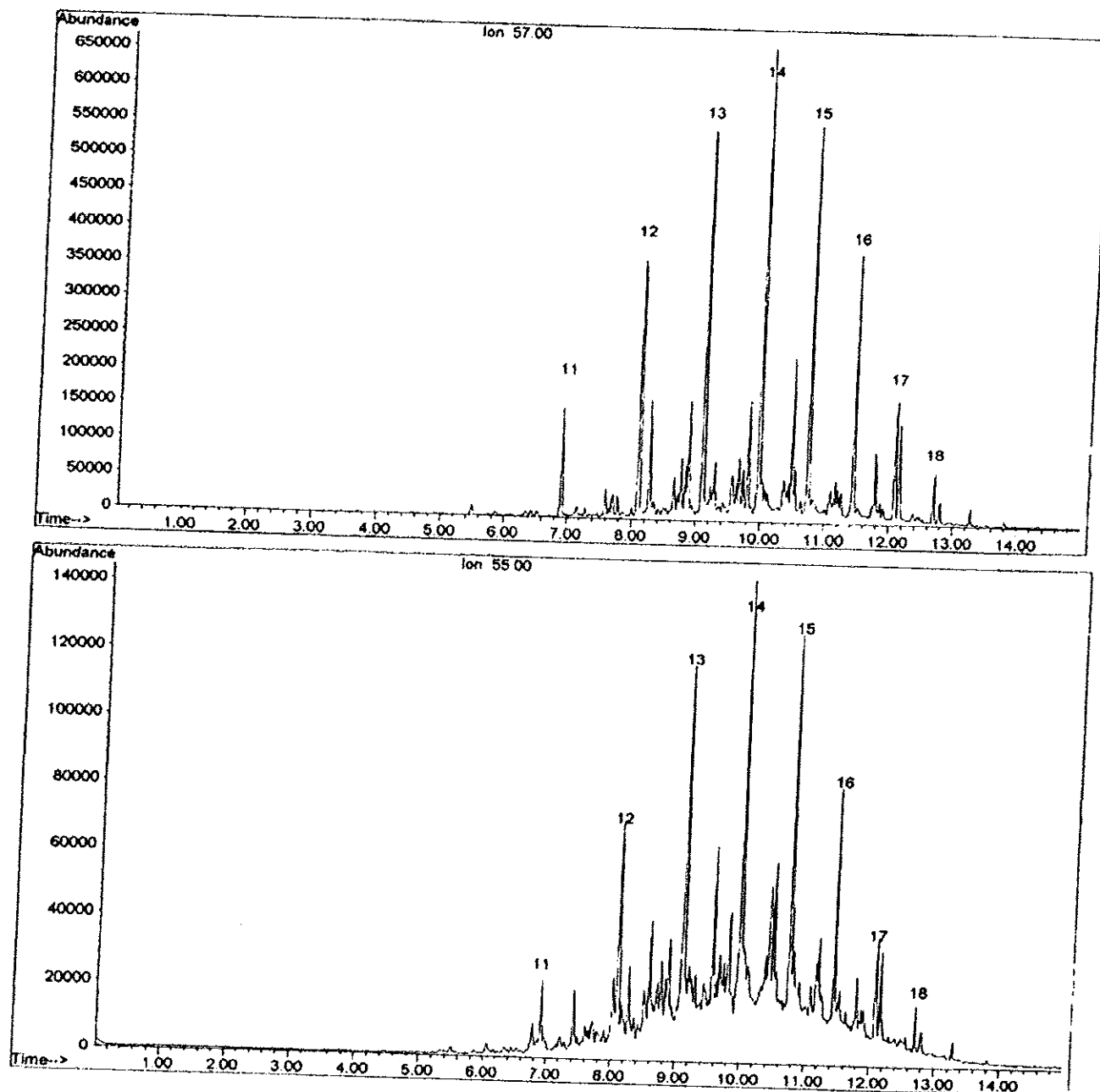
Extracted ion chromatograms of known 50% weathered kerosene, showing ion 57 (top) and ion 55 (bottom). Note that the patterns are identical except for a lower abundance in the bottom chart. If alkenes are present, as shown in Exhibit 2, the patterns exhibit an easily detectable change.¹



¹ Source: Lentini, JJ, Differentiation of asphalt and smoke condensates from liquid petroleum distillates using GC/MS, *J. Forensic Sci* 1998;43(1):97-113. Figures 5C and 5D.

Exhibit 2.

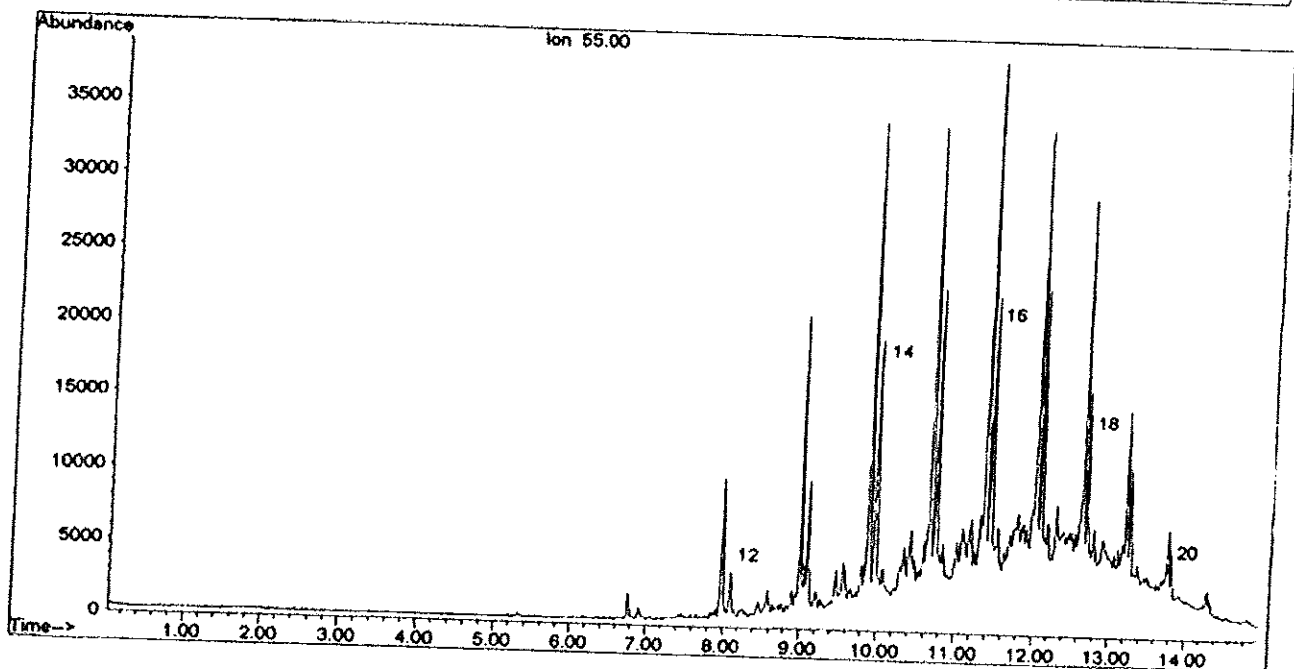
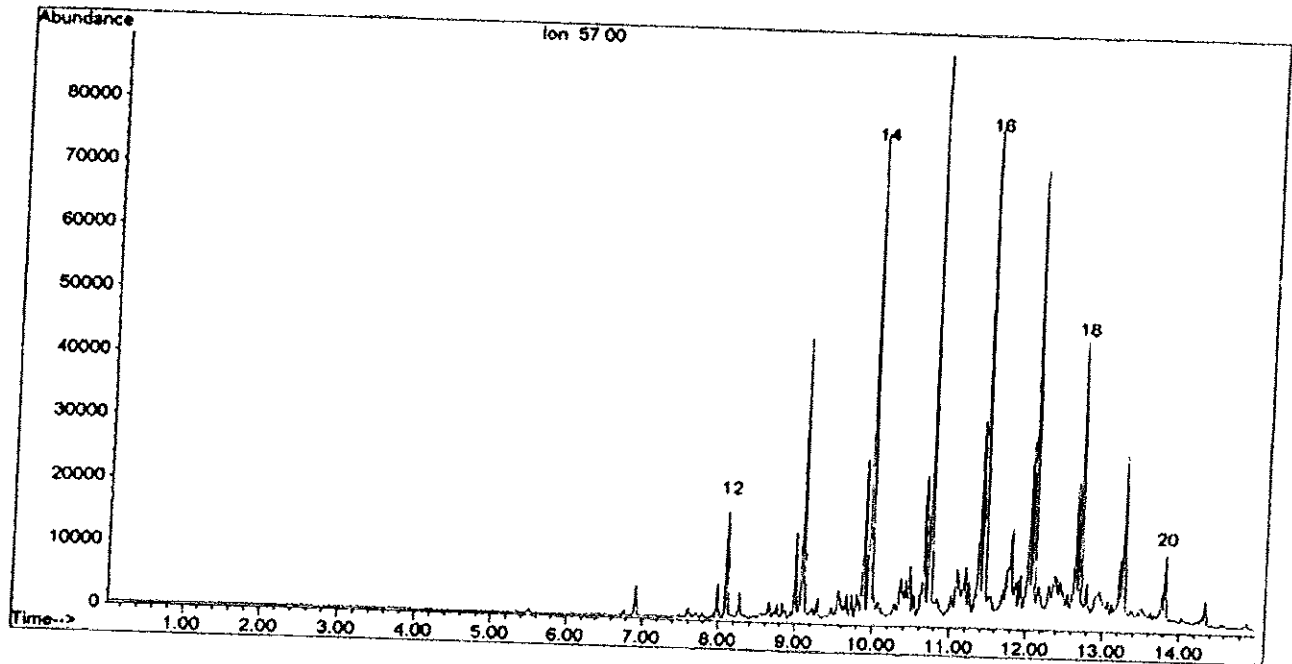
Extracted ion chromatograms of known 50% weathered kerosene, showing ion 57 (top) and ion 55 (bottom). Note that the patterns are identical except for a lower abundance in the bottom chart. If alkenes are present, as shown in Exhibit 2, the patterns exhibit an easily detectable change.¹



¹ Source: Lentini, JJ, Differentiation of asphalt and smoke condensates from liquid petroleum distillates using GC/MS, *J. Forensic Sci* 1998;43(1):97-113. Figures 5C and 5D.

Exhibit 3.

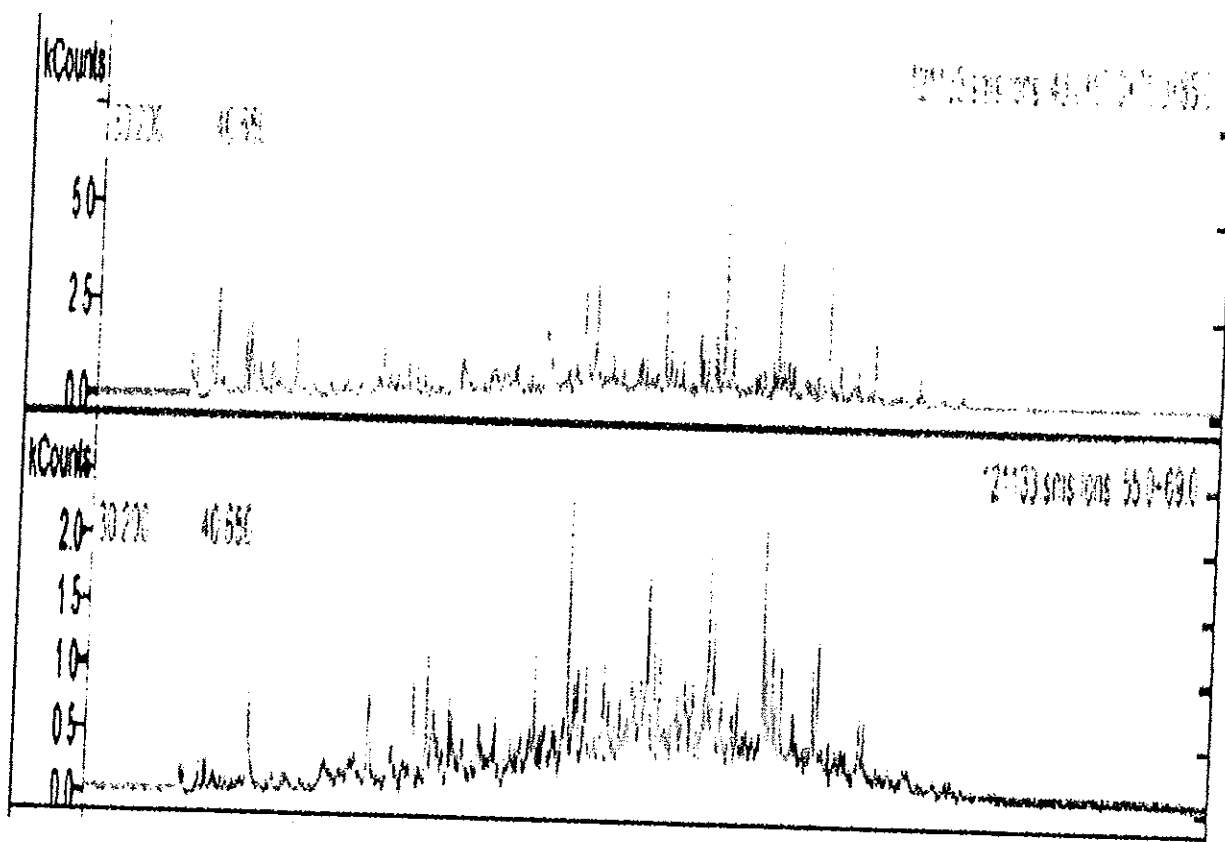
Extracted ion chromatograms of known asphalt smoke condensate showing ion 57 (top) and ion 55 (bottom). The increase in the size of the first peak in each doublet is diagnostic for the presence of alkenes, which are not found in petroleum distillates, but are found in the decomposition products of asphalt and some plastics.²



² Source: Lentini, JJ, Differentiation of asphalt and smoke condensates from liquid petroleum distillates using GC/MS, *J. Forensic Sci* 1998;43(1):97-113, Figures 8A and 8B.

Exhibit 4.

Extracted ion profiles showing alkanes (top) and alkenes (bottom) from "Sample 1, Fire debris from bedroom 1."³ Note that the pattern changes markedly from the top chromatogram to the bottom chromatogram. This is conclusive proof of the presence of alkenes, which in turn proves that the residue is not heavy petroleum distillate, but is asphalt smoke condensate.



³ Source: EFI Chemical Laboratory Report dated December 20, 2011.